

## CLAIMS

We claim:

1. A method for reduced spatial resolution transcoding of a compressed bitstream of a sequence of frames of a video signal, comprising:
  - decoding the frames;
  - storing the decoded frames in a first frame buffer;
  - down-sampling the decoded frames to a reduced resolution;
  - storing the reduced resolution frames in a second frame buffer; and
  - partially encoding the reduced resolution frames to produce a reduced resolution compressed bitstream of the video.
2. The method of claim 1 wherein the decoding further comprises:
  - variable length decoding of the bitstream to yield an output comprising full-resolution motion vectors and quantized DCT coefficients for each block in each frame;
  - inverse quantizing the quantized DCT coefficients for each block in each frame;
  - applying an inverse DCT to the inverse quantized blocks of the frames; and
  - motion compensating with full resolution motion vectors of the stored decoded frames.

1 3. The method of claim 1 wherein the partial encoding further comprises:  
2 motion compensating with reduced resolution motion vectors of the stored  
3 reduced resolution frames;  
4 applying a DCT to the motion compensated difference of the reduced  
5 resolution frames;  
6 quantizing DCT blocks of the frames; and  
7 variable length coding the quantized blocks of the frames.

1 4. The method of claim 2 wherein the motion compensating during the decoding  
2 further comprises:  
3 adding a full resolution motion compensated prediction of a previous  
4 decoded frame to the current frame.

1 5. The method of claim 3 wherein the motion compensating during the partial  
2 encoding further comprises:  
3 subtracting a reduced resolution motion compensated prediction of a  
4 previous reduced resolution frame from the current reduced resolution frame.

1 6. The method of claim 3 further comprising:  
2 estimating the reduced resolution motion vectors from the reduced resolution  
3 frames.

1 7. The method of claim 2 further comprising:  
2 mapping the full-resolution motion vectors to the reduced resolution motion  
3 vectors from the variable length decoded frames.

1 8. A closed-loop transcoder for reduced spatial resolution transcoding of a  
2 compressed bitstream of a sequence of frames of a video signal, comprising:  
3 a decoder with motion compensation using full resolution motion vectors  
4 stored in a first frame buffer to generate partial decoded frames from the  
5 compressed bitstream;  
6 a down-conversion block to down-sample the decoded frames to reduced  
7 resolution frames; and  
8 a partial encoder with motion compensation using reduced resolution motion  
9 vectors stored in a second frame buffer to generate a reduced spatial resolution  
10 compressed bitstream of the video.